

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2003-046700

(43)Date of publication of application : 14.02.2003

(51)Int.Cl.

H04N 1/00
B41J 5/30

(21)Application number : 2001-232019 (71)Applicant : KONICA CORP

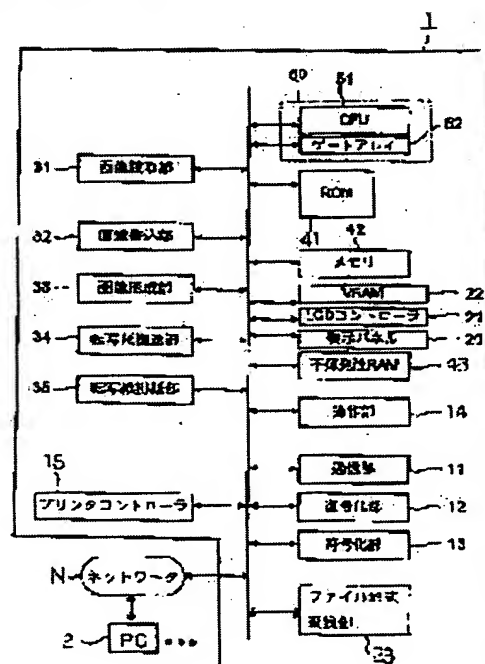
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(54) IMAGE FORMING DEVICE AND IMAGE FORMING SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an image forming device/system for confirming a scan image without permitting an operator to perform a demonstration operation and for confirming the preview of a scan result in its operation part.

SOLUTION: Image information which is read by an image reading part 31 is converted into a PDF (portable document format) file format in a file format conversion part 23 and it is picture-displayed in a display part 20. Image information by the PDF file format is transmitted to a personal computer 2 designated in the operation part 14. The personal computer 2 receiving image information by the PDF file format automatically starts. Acrobat being image display software for picture-displaying image information by the PDF file format and picture-displays image information by the PDF file format.



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CLAIMS

[Claim(s)]

[Claim 1] Digitize the image information of the manuscript optically read with the scanner, and it memorizes for the storage means as image information data. In the image formation equipment which forms and outputs an image to a predetermined record medium based on said image information data by the command from a control unit or a computer A conversion means to change the image information which said scanner read into the digital data format of generally being used in the computer, Image formation equipment characterized by having the display means which carries out a screen display of the image information by this digital data format, and a transfer means to transmit the image information by this digital data format to a computer.

[Claim 2] In the image formation system which consists of 1 or two or more computers which were connected with the image formation equipment connected to the network in this network said image formation equipment A conversion means to change the image information which the scanner read into the digital data format of generally being used in the computer, It has the display means which carries out a screen display of the image information by this digital data format, and a transfer means to transmit the image information by this digital data format to a computer. And said computer A receiving means to receive the image information by said digital data format transmitted from said image formation equipment, A starting means to start automatically the image display software for carrying out a screen display of the image information by this digital data format at the same time it receives the image information by this digital data format, The image formation system characterized by having the display means which carries out a screen display of the image information by said digital data format automatically with this image display software.

[Claim 3] It is the image formation equipment according to claim 1 or 2 or the image formation system which said digital data format is a PDF file format, and is characterized by said image display software being Acrobat.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the image formation equipment and the image formation system by which the scanner supports the image display software generally used in a computer.

[0002]

[Description of the Prior Art] The so-called image formation equipment of a digital format changes into electric image information the image information of the manuscript read optically with an image sensor, further, digitizes this electric image information, memorizes it for the storage means as image information data, and forms and outputs an image to a predetermined record medium at a predetermined stage based on said image information data.

[0003] However, the image information data in the image formation equipment of said digital format were impossible for saying [forming an image combining these, since the (digital) data format differs from the image information data of the digital format currently dealt with with the common personal computer]. Thus, the use gestalt of the difference in the (digital) data format, therefore the image formation equipment of the digital format concerned was limited.

[0004] Moreover, if an operator did not perform explicit actuation (for example, this scanning data read and this scanning image are displayed on a monitor through a personal computer.) with the image formation equipment of the digital format concerned, it was impossible to have checked the contents of the scanning data which the scanner read. Therefore, also when a metaphor scan was failure, the unnecessary print was for there to be no means which check it and to be performed, when it outputs by not performing this explicit actuation (when for an object to shift or it to be read aslant etc.).

[0005] and the above -- the case where the image formation equipment of the digital format concerned is connected to the network, and it has two or more terminals (personal computer etc.) even if it is the case where explicit actuation is performed -- this -- since the image information data in the image formation equipment of the digital format concerned had a huge capacity **, the problem that the information traffic in a network (network traffic) will increase for explicit actuation occurred.

[0006]

[Problem(s) to be Solved by the Invention] The place which this invention is made in view of the above-mentioned situation, and is made into the purpose is to offer the image formation equipment and image formation equipment which can check a scanning image, without an operator performing explicit actuation, and can check the preview of a scanning result in the control unit.

[0007]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, invention according to claim 1 Digitize the image information of the manuscript optically read with the scanner, and it memorizes for the storage means as image information data. In the image formation equipment which forms and outputs an image to a predetermined record medium based on said image information data by the command from a control unit or a computer A conversion means to change the image information which said scanner read into the digital data format of generally being used in the computer. It is characterized by having the display means which carries out a screen display of the image information by this digital data format, and a transfer means to transmit the image information by this digital data format to a computer.

[0008] In order to solve the above-mentioned technical problem, invention according to claim 2 In the image formation system which consists of 1 or two or more computers which were connected with the image formation equipment connected to the network in this network said image formation equipment A conversion means to change the image information which the scanner read into the digital data format of generally being used in the computer. It has the display means which carries out a screen display of the image information by this digital data format, and a transfer means to transmit the image information by this digital data format to a computer. And said computer A receiving means to receive the image information by said digital data format transmitted from said image formation equipment, A starting means to start automatically the image display software for carrying out a screen display of the image information by this digital data format at the same time it receives the image information by this digital data format. It is characterized by having the display means which carries out a screen display of the image information by said digital data format automatically with this image display software.

[0009] In order to solve the above-mentioned technical problem, it is characterized by for invention according to claim 3 being image formation equipment according to claim 1 or 2 or an image formation system, and for said digital data format being a PDF file format, and said image display software being Acrobat.

[0010]

[Embodiment of the Invention] Hereafter, 1 operation gestalt of the image formation equipment concerning this invention is explained concretely, referring to a drawing.

[0011] (Outline configuration) The whole image formation equipment configuration concerning this invention is first explained with reference to drawing 1 and drawing 2. Drawing 1 is drawing showing the whole image formation system configuration concerning this invention. Drawing 2 is the functional block diagram showing the configuration of the control system of the image formation equipment concerning this invention.

[0012] As shown in drawing 1, the image formation system concerning this invention consists of at least one personal computer 2 mainly connected to the image formation equipment 1 explained below and this image formation equipment 1 through Network N.

[0013] As shown in drawing 2, the image formation equipment 1 in this operation gestalt As it is the compound machine which has the so-called facsimile function, a copying machine, and printer ability and is shown in this drawing With the communications department 11 which is the means of communications which communicates according to a predetermined facsimile communication procedure The decryption section 12 which is a decryption means to decrypt receiving image information and to elongate at the time

of reception, The coding section 13 which is a coding means to compress manuscript image information and to encode at the time of transmission, The print controller 15 which performs image formation (print) based on the information from the personal computer 2 which is an external information processor, The control unit 14 which is an actuation means to perform actuation equipped with the key group (ten key) of a large number which perform a setup in various modes, the telephone number input of a communication link place, etc., start **, etc., For example, it is constituted including the display panel 20 which is a display means to display the image data based on a PDF file format using a LCD touch panel, and VRAM22 which is a screen-display data storage means to memorize the data for a screen display.

[0014] Furthermore, the image formation equipment 1 in this operation gestalt The image read station 31 which is a manuscript reading means for consisting of predetermined optical system and reading a manuscript image, The image write-in section 32 which is an image write-in means to form an electrostatic latent image, and the image formation section 33 which is an image formation means to perform image formation on the transfer paper as record material, The transfer paper conveyance section 34 which a transfer paper is interlocked with actuation of the image formation section 33, and conveys it and which is a transfer paper conveyance means, The file-format transducer 23 which is a means to transform into a PDF file format the file format of image information data which received in the transfer paper delivery unit 35 which is a transfer paper delivery means to deliver paper to a transfer paper, and the image information and the communications department 11 which read by the image read station 31, The nonvolatile RAM 43 which is an image storage means to memorize the image information data received in the image information and the communications department 11 which read by said image read station 31, ROM41 which is the first storage means which memorizes the image data of the PDF file format displayed on a display panel 20 etc., The LCD controller 21 which is the display-control means which carries out a display control so that the image display data memorized by VRAM22 may be displayed on a display panel 20, It is constituted including the control section 50 which are the image-processing means of the illustration abbreviation which performs predetermined processings (variable power processing, superposition processing of an image, etc.) to the image information received or read, and is stored in nonvolatile RAM 43, and the control means which controls each part of a configuration according to a predetermined control program.

[0015] In addition, although the image formation equipment 1 in this operation gestalt mentions the so-called compound machine as the example, even if it is the configuration of having extracted only the printer ability in the image formation equipment 1 in this operation gestalt, it can be used as image formation equipment, for example. Moreover, although the image formation equipment 1 in this operation gestalt is holding the PDF file format for the example as a data format (digital) of the image information data currently dealt with with the common personal computer, as long as it is generally dealt with, the thing of file format other than this is sufficient as it.

[0016] Call origination is performed among public networks, such as NTT, or it restores to the network control unit (network control unit) for performing connection control of the call in from many and unspecified other parties, restoration, cutting processing, etc., and the modulating signal transmitted by the public network at the time of reception, and becomes irregular in a digital receiving image, and the communications department 11 has the communication link modem which modulates manuscript image information and is changed into a modulating signal so that it may have consistency in the frequency band of a public network at the time of transmission.

[0017] It comes in piles to arrange LCD17t to which a control unit 14 performs the display of touch panel 17s and the pattern which receive actuation as shown in drawing 3, or an alphabetic character. Display control unit 17a which pushes touch panel 17s and is made to be operated in the location currently displayed on LCD17t, Key ** 17c for a telephone number input which consists of the ten key of - "9", a "0" "" key, the "" key, etc., 17d of check **, help ** 17e, and 17f of application **, It has mode change-key 17n-1 for performing the change of 17h of reset **, a stop / clear ** 17i, interrupt copy ** 17j, 17m of start **, and a copy function and a facsimile function, and printer ability, 17n-2, and 17n-3.

[0018] If explanation is returned to drawing 2, the image read station 31 will read the images (a character string, pictures, etc.) of a publication as optical information based on the exposure light of the light source in the manuscript of one sheet out of the bundle of a manuscript, and will change this into electric information. The optical information concerning the manuscript side read according to the light source repeats reflection by the mirror, and reaches CCD image pick-up equipment through image formation optical system. CCD image pick-up equipment has the photoelectric surface where two or more pixels which have a photo-electric-conversion function were arranged, the optical information which contains the image information of said manuscript side by the pixel of these plurality will be received, and this will be changed into electric information.

[0019] The image write-in section 32 irradiates the laser beam controlled based on above-mentioned electric information at photo conductor drum lifting, and forms an electrostatic latent image. The electric information which the optical information concerning a manuscript side is changed and contains the image information is used in order to carry out control concerning the laser beam oscillated from semiconductor laser. The laser beam controlled and sent based on said electric information is irradiated being scanned by photo conductor drum lifting, and the electrostatic latent image based on said electric information is formed.

[0020] The image formation section 33 forms an image on a transfer paper based on the electrostatic latent image formed in the above-mentioned photo conductor drum lifting. By electrifying the whole photo conductor drum front face uniformly, and making a toner particle adhere to an electrostatic latent image, a toner image is formed to a transfer paper side. And image formation is carried out by sticking by pressure of the imprinted toner image.

[0021] The transfer paper conveyance section 34 becomes two or more roller lists which convey a transfer paper from the device for driving them. Conveyance from the tray (a detachable tray, a medium tray, external feeding equipment, etc. are included) to the image formation section 33, In carrying out image formation to conveyance from the image formation section 33 to the transfer paper delivery unit 35, and both sides of a transfer paper A transfer paper is guided according to a predetermined conveyance path according to the predetermined conveyance conditions by conveyance and a halt of conveyance to the transfer paper pars inflexa (illustration abbreviation) which carries out front flesh-side reversal of the transfer paper, conveyance from said transfer paper pars inflexa to the image formation section 33, etc. in each conveyance path from the image formation section.

[0022] In the image-processing means of an illustration abbreviation, after pretreating in an enlarging-or-contracting circuit and a concentration amendment circuit if needed to the digital picture signal read by the image read station 31 or the digital picture signal received by the communications department 11, image sticking by pressure is carried out in a compression expansion circuit, and it memorizes to nonvolatile RAM 43. And this memorized image is read, and it elongates in a compression expansion circuit, and outputs to the image formation section 33.

[0023] Nonvolatile RAM 43 has a copy field and a facsimile field, stores in a copy field the image information read by the image read station 31, and carries out the temporary storage of the image information received or transmitted in the communications department 11 to a facsimile field.

[0024] While a control section 50 has CPU51 and gate array 52 grade, managing the condition of each part of a configuration of a

compound machine and controlling according to a predetermined control program. In addition, the display and control section which performs the display control of a display panel 20 based on ROM41, It has the communications control section for performing control of the actuation control section for performing control of the printer control section for performing drive control of the image control section for controlling an image-processing means, and the image formation section 33, and a control unit 14, and the communications department 11 etc. Furthermore, in addition, a control section 50 controls actuation of the conveyance system of the transfer paper delivery unit 35 and transfer paper conveyance section 34 grade.

[0025] (Characteristic configuration of this invention) Next, the image formation equipment and image formation system feature-configuration concerning this invention is explained with reference to drawing 2 and drawing 3.

[0026] As shown in [explanation about image formation equipment concerning this invention] drawing 3, the image formation equipment in this operation gestalt adjoins a control unit 14, and has the display panel 20. This display panel 20 changes into a PDF file format the image information received in the image information and the communications department 11 which were read by the image read station 31, and it is constituted so that this image information may be displayed in a PDF file format.

[0027] The image information received in the image information and the communications department 11 which are read by the image read station 31 is sent to the file-format transducer 23 (drawing 2 -refer to), and is once changed into a PDF file format in this file-format transducer 23. And a screen display of this image information is carried out to a display panel 20 in a PDF file format.

[0028] Thus, by carrying out a screen display with a display panel 20 before the output, also when the read is failure, the image information read in the image read station 31 or the personal computer 2 can be known, for example, before outputting it (when it shifts or is read aslant etc.). Therefore, it can output efficiently, without performing an unnecessary output. Moreover, a display panel 20 is formed in the image formation equipment 1 concerned, and the contents check can be performed by displaying said image information with this display panel 20, without using external means, such as a personal computer. Even if it is the case where follow, for example, the image formation equipment 1 concerned is connected to Network N, and it is shared by two or more terminals (personal computer etc.), the information traffic in a network (network traffic) does not increase by the above-mentioned actuation.

[0029] When the so-called push type scanner is performed with the [explanation about image formation system] concerning this invention] above-mentioned image formation equipment 1, the image information read by the image read station 31 of the image formation equipment 1 concerned will be transmitted to the desired personal computer 2 connected for minding a network (refer to drawing 2).

[0030] First, after being sent to the file-format transducer 23 and changed into a PDF file format by this file-format transducer 23, in a display panel 20, a screen display of the image information read by the image read station 31 of the above-mentioned image formation equipment 1 is carried out in a PDF file format. And in the control unit 14 of the image formation equipment 1 concerned, after assignment of the personal computer 2 of the request which transmits the image information by this PDF file format is performed, it is transmitted to the personal computer 2 of said request by the communications department 11 through Network N.

[0031] Acrobat which is the image display software for carrying out a screen display of the image information by the so-called PDF file format is installed in this personal computer 2 that receives transmission of the image information by said PDF file format from image formation equipment 1, while receiving the image information data based on said PDF file format transmitted from said image formation equipment 1, Acrobat which is this image display software is started automatically, and a screen display of the image information by this PDF file format is carried out to a monitor.

[0032] Thus, after changing into a PDF file format the image information read by the image read station 31 of the above-mentioned image formation equipment 1, it transmits to the desired personal computer 2, and it becomes possible in this personal computer 2 to check said image information also in this personal computer 2 by carrying out a screen display of the image information automatically. Moreover, although the image information concerned is a PDF file format therefore, it is also possible to also perform various image processings (image processing) in this personal computer 2 and to output the image information after are possible, transmitting again the image information after performing this image processing (image processing) further to said image formation equipment 1 and performing said image processing (image processing) in this image formation equipment 1.

[0033] Hereafter, one example of the image formation system concerning this invention is briefly explained with reference to the flow chart shown in drawing 4 and drawing 5. Drawing 4 is the flow Fig. showing the flow of data processing in the image formation equipment shown in drawing 1 and drawing 2. Drawing 5 is the flow Fig. showing the flow of data processing in the personal computer shown in drawing 1 and drawing 2.

[0034] as shown in drawing 4, the image information of a desired object reads in the image read station of image formation equipment -- having (step S01) -- this image information is changed into a PDF file format in a file-format transducer (step S02). And a screen display of this image information is carried out to a display 20 in a PDF file format (step S03).

[0035] A user chooses whether this image information is further transmitted to a desired personal computer, after checking this image information by which a screen display was carried out to the display 20 (step S04).

[0036] In not transmitting this image information to a desired personal computer, it chooses whether this image information is outputted as it is (step S05). When outputting as it is is chosen, this image information is outputted (step S06). Moreover, when not outputting as it is is chosen (i.e., when it chooses performing read of image information again), it returns to step S01 shown in this drawing.

[0037] In transmitting this image information to a desired personal computer, it specifies the personal computer which transmits this image information in a control unit (step S07). And this image information is transmitted to the specified personal computer (step S08). Furthermore, after performing the response (the completion of reception) check from the personal computer which is the destination (step S09), it returns to step S05 shown in this drawing.

[0038] Having these steps, a transfer of the image information by the PDF file format to the personal computer which contents-checked [of the scanning data (image information read by the image read station 31) in image formation equipment], and was specified, and an output of scanning data (image information read by the image read station 31) are ended.

[0039] As shown in drawing 5, as for the personal computer with which the image information by the PDF file format has been transmitted from the above-mentioned image formation equipment, this image information is received first. (Step 10). And Acrobat which is the image display software for being able to come, simultaneously carrying out a screen display of the image information by this PDF file format is started (step 11). Furthermore, a screen display of the image information by this PDF file format is carried out to a monitor (step 12).

[0040] Having these steps, the startup of Acrobat which is the image display software for carrying out a screen display of the image information by the reception activity of the image information by said PDF file format in this personal computer and this PDF file format, and the screen display of the image information by this PDF file format are ended.

[0041]

[Effect of the Invention] As stated above, since a screen display of the image information read in the image read station or the personal

computer is carried out with the display panel before an output, the image formation equipment concerning this invention can be known, for example, before outputting it, when the read is failure (when it shifts or is read aslant etc.). Therefore, an efficient print (output) can be performed, without performing an unnecessary output. moreover, the thing for which this display panel performs the contents check of image information, without using external means, such as a personal computer, -- for example, even if it is the case where the image formation equipment concerned is connected to a network, and it is shared by two or more terminals (personal computer etc.), the contents check of said image information can be performed, without increasing the information traffic in a network (network traffic).

[0042] As stated above, since it transmits to a desired personal computer and the image formation system concerning this invention carries out a screen display of the image information automatically in this personal computer after changing into a PDF file format the image information read in the image read station of image formation equipment, also in this personal computer, it checks said image information and can carry out things. Moreover, since the image information concerned is a PDF file format, it is also possible to, perform various image processings (image processing) in this personal computer for example. Furthermore, it is also possible to output the image information after transmitting again the image information after performing this image processing (image processing) to said image formation equipment and performing said image processing (image processing) in this image formation equipment.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the whole image formation system configuration in the operation gestalt of this invention.

[Drawing 2] It is drawing showing the internal configuration of the image formation equipment in the operation gestalt of this invention.

[Drawing 3] It is drawing showing the control unit and display panel of image formation equipment which are shown in drawing 1 and drawing 2.

[Drawing 4] It is the flow Fig. showing the flow of data processing in the image formation equipment shown in drawing 1 and drawing 2.

[Drawing 5] It is the flow Fig. showing the flow of data processing in the personal computer shown in drawing 1 and drawing 2.

[Description of Notations]

- 1 -- Image formation equipment
- 11 -- Communications department
- 12 -- Decryption section
- 13 -- Coding section
- 14 -- Control unit
- 15 -- Printer controller
- 20 -- Display panel
- 21 -- LCD controller
- 22 -- VRAM
- 23 -- File-format transducer
- 31 -- Image read station
- 32 -- The image write-in section
- 33 -- Image formation section
- 34 -- Transfer paper conveyance section
- 35 -- Transfer paper delivery unit
- 41 -- ROM
- 42 -- Memory
- 43 -- Nonvolatile RAM
- 50 -- Control section
- 51 -- CPU
- 52 -- Gate array
- 2 -- Personal computer
- N -- Network

[Translation done.]

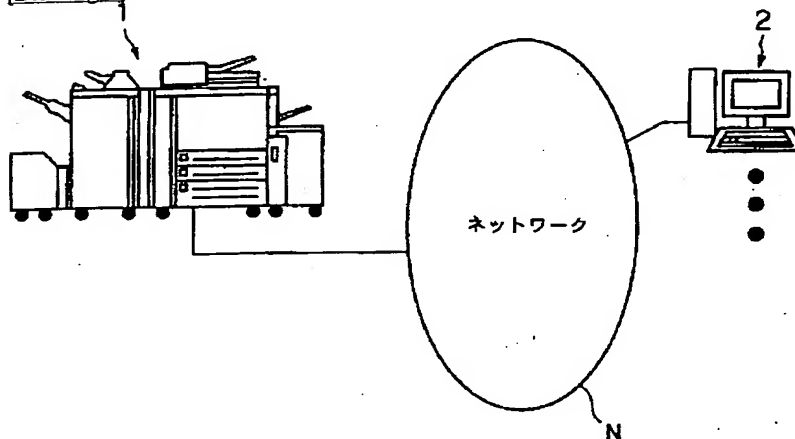
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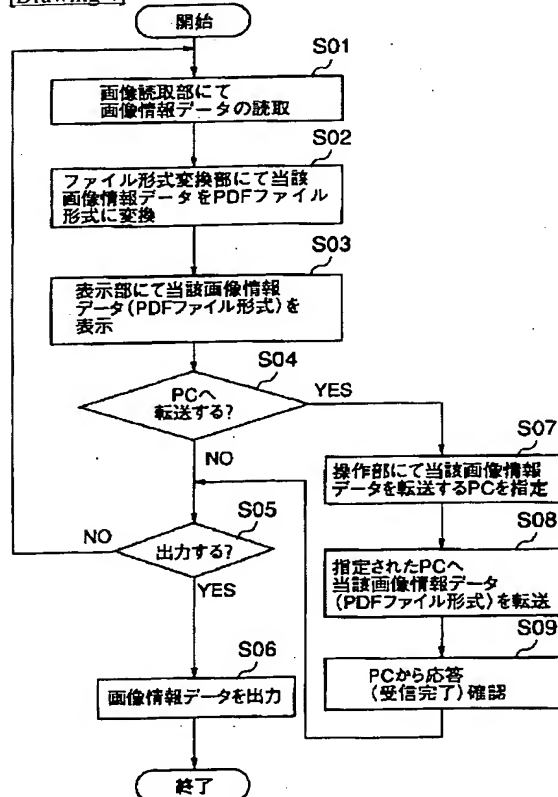
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DRAWINGS

[Drawing 1]

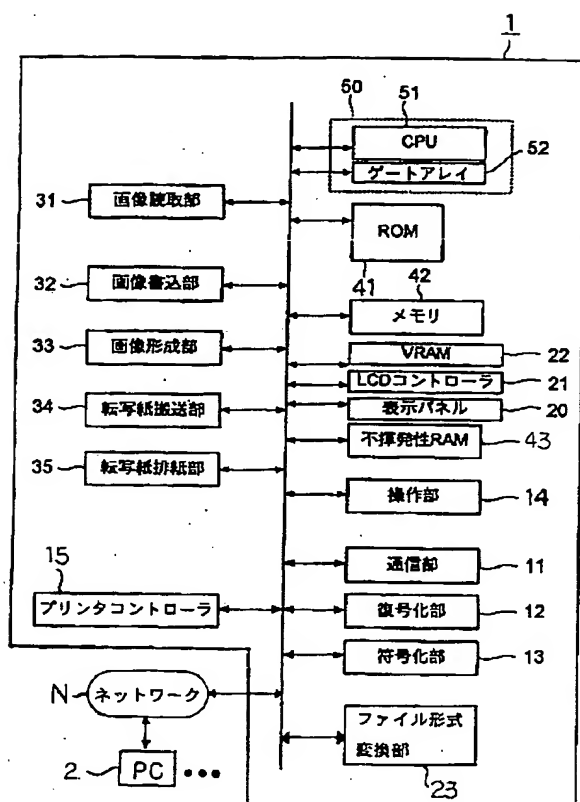


[Drawing 4]

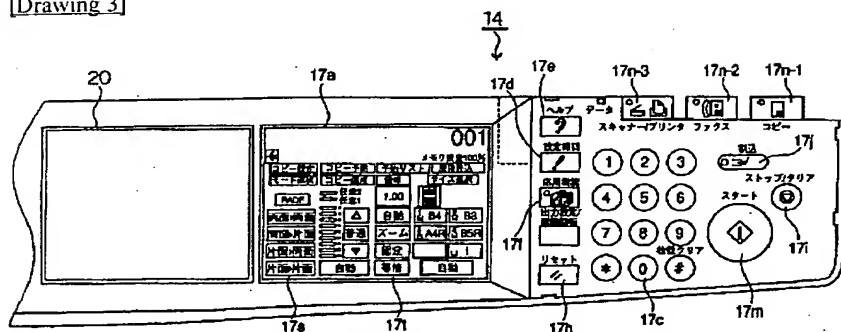


[Drawing 2]

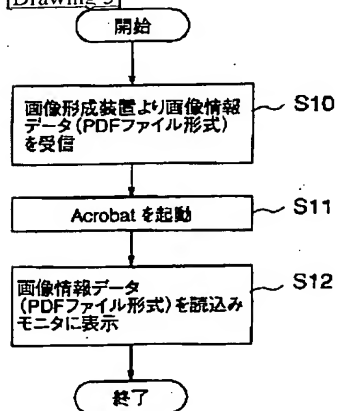
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[Drawing 3]



[Drawing 5]



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